PATENT ABSTRACTS OF JAPAN

(11)Publication number : 09-259275
(43)Date of publication of application : 03.10.1997

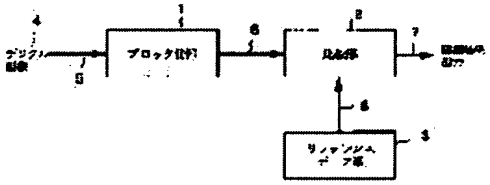
(51)Int.Cl. G06T 7/00

(21)Application number : 08-066300
(22)Date of filing : 22.03.1996

(71)Applicant : CANON INC
(72)Inventor : OOSHIMA KEIDAKU
NAKAJIMA TAKAFUMI
OWADA MITSURU
SAKAMOTO SHIGERU
MURAMATSU MIZUKI

(54) DEVICE AND METHOD FOR PROCESSING IMAGE

(57)Abstract:
PROBLEM TO BE SOLVED: To simplify constitution, to reduce a memory consumption capacity and to judge whether or not it is a special image.
SOLUTION: When a digital image is inputted, in a blocking part 1, the density average value for which 256 ×256 pixels are one block for instance is calculated and it is outputted to a comparison part 2. The comparison part 2 judges whether or not the pattern of the density average value of the continuous blocks successively inputted from the blocking part 1 matches with reference data stored in a reference data part 3 beforehand and outputs the result.



LEGAL STATUS

[Date of request for examination]	18.12.2001
[Date of sending the examiner's decision of rejection]	
[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]	
[Date of final disposal for application]	
[Patent number]	3679495
[Date of registration]	20.05.2005
[Number of appeal against examiner's decision of rejection]	
[Date of requesting appeal against examiner's	

decision of rejection]
[Date of extinction of right]

Bibliography

---

(19) [Publication country] Japan Patent Office (JP)
(12) [Kind of official gazette] Open patent official report (A)
(11) [Publication No.] JP,9-259275,A
(43) [Date of Publication] October 3, Heisei 9 (1997)
(54) [Title of the Invention] An image processing system and an approach
(51) [International Patent Classification (6th Edition)]

G06T 7/00

[FI]

G06F 15/70 310
460 Z

[Request for Examination] Un-asking.
[The number of claims] 28
[Mode of Application] OL
[Number of Pages] 22
(21) [Application number] Japanese Patent Application No. 8-66300
(22) [Filing date] March 22, Heisei 8 (1996)
(71) [Applicant]
[Identification Number] 000001007
[Name] Canon, Inc.
[Address] 3-30-2, Shimo-maruko, Ota-ku, Tokyo
(72) [Inventor(s)]
[Name] Oshima ****
[Address] 3-30-2, Shimo-maruko, Ota-ku, Tokyo Inside of Canon, Inc.
(72) [Inventor(s)]
[Name] Nakajima Takafumi
[Address] 3-30-2, Shimo-maruko, Ota-ku, Tokyo Inside of Canon, Inc.
(72) [Inventor(s)]
[Name] Owada **
[Address] 3-30-2, Shimo-maruko, Ota-ku, Tokyo Inside of Canon, Inc.
(72) [Inventor(s)]
[Name] Sakamoto **
[Address] 3-30-2, Shimo-maruko, Ota-ku, Tokyo Inside of Canon, Inc.
(72) [Inventor(s)]
[Name] Muramatsu Mizuki
[Address] 3-30-2, Shimo-maruko, Ota-ku, Tokyo Inside of Canon, Inc.
(74) [Attorney]
[Patent Attorney]
[Name] Otsuka Yasunari (besides one person)

[Translation done.]

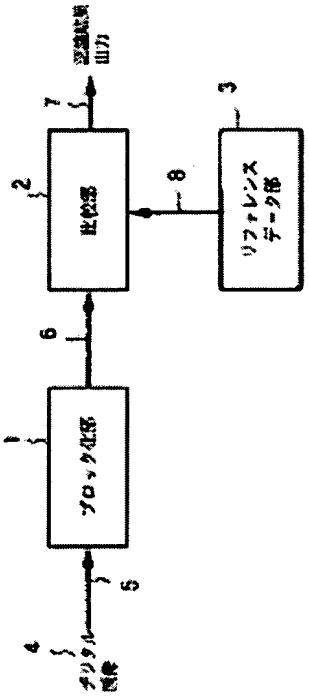
* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

Epitome

(57) [Abstract]
[Technical problem] It has with an easy configuration, and moreover, there is little consumption memory space, and it ends, and it judges whether it is a special image.
[Means for Solution] If a digital image is inputted, in the blocking section 1, the concentration average which makes 256x256 pixels 1 block, for example will be computed, and it will be outputted to a comparator 2. A comparator 2 judges whether the pattern of the concentration average value of the continuous block by which a sequential input is carried out from the blocking section 1 is in agreement with the reference data beforehand memorized by the reference data division 3, and the result is outputted.

[Translation done.]



[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] The image processing system which carries out [having a 1st generating means generate the color component signal for record, a processing means perform the processing for image formation based on the color component signal for said record, the 2nd generating means generate the indication signal which shows the color component which said processing means is processing, and the recognition means recognize correlation with this color component signal and a specific image based on the color component signal for said record according to said indication signal, and] as the description.
[Claim 2] Said recognition means is an image processing system given in the 1st term of a claim characterized by recognizing whether it is the specific image which the color picture expressed by the color component signal for said record should not carry out image formation.
[Claim 3] Furthermore, an image processing system given in the 1st term of a claim characterized by having an image formation means to perform image formation according to the color component signal processed by said processing means.
[Claim 4] Said image formation means is an image processing system given in the 3rd term of a claim characterized by performing image formation in yellow, a Magenta, and the record color of cyanogen at least.
[Claim 5] Said recognition means is an image processing system given in the 4th term of a claim to which said image formation means is characterized by performing recognition actuation at the period which is performing image formation in the record color of a Magenta.
[Claim 6] Said image formation means is an image processing system given in the 3rd term of a claim characterized by forming a color picture in field sequential.
[Claim 7] A storage means for said recognition means to extract each central value of two or more blocks about the description part in a specific image, and to memorize as reference data, An extract means to extract central value from said color component signal in said block unit, An image processing system given in the 1st term of a claim characterized by including a comparison means to compare the reference data memorized by the central value group extracted by this extract means, and said storage means, and an output means to output the comparison result of this comparison means.
[Claim 8] It is an image processing system given in the 7th term of a claim to which said storage means memorizes the upper limit and lower limit of central value of each block, and it is characterized by said comparison means judging whether each central value of the inputted color component signal goes into the range of the upper limit of the central value in corresponding reference data, and a lower limit.
[Claim 9] It is an image processing system given in the 7th term of a claim which memorizes the reference data of at least two description parts in a specific image for said storage means, and is characterized by judging whether said comparison means inputted the central value which is altogether in agreement with corresponding reference data.
[Claim 10] Said storage means is an image processing system given in the 7th term of a claim

which carries out storage maintenance of the physical relationship of two or more descriptions part in one specific image, and is further characterized by judge whether those physical relationship is also in agreement when it judges with said comparison means exist in the color component signal into which the central value corresponding to all reference data was inputted.
[Claim 11] Said comparison means is an image processing system given in the 10th term of a claim characterized by giving and judging a tolerance to physical relationship.
[Claim 12] It is an image processing system given in the 7th term of a claim which only the part which carried out predetermined include-angle rotation of the reference data of the description part in one specific image memorizes said storage means, and is characterized by comparing said comparison means with the reference data of each angle of rotation.
[Claim 13] It is an image processing system given in the 7th term of a claim which the reference data constituted from central value of a block of different size by said storage means memorize, and said extract means quantizes the inputted color component signal with the block of each size, and is characterized by to compare with the reference data which consist of block data of each size with which the storage maintenance of said comparison means was carried out at the quantization data and said storage means of each size.
[Claim 14] Said comparison means is an image processing system given in the 7th term of a claim characterized by comparing the maximum and the minimum value of central value of the block which constitutes the reference data memorized by said storage means with the central value of each block of the color component signal into which it was inputted as tolerance of the whole reference data concerned.
[Claim 15] The 1st generating process which generates the color component signal for record, and down stream processing which performs processing for image formation based on the color component signal for said record, The image-processing approach characterized by having the 2nd generating process of generating the indication signal which shows the color component which said down stream processing is processing, and the recognition process which recognizes correlation with this color component signal and a specific image based on the color component signal for said record according to said indication signal.
[Claim 16] Said recognition process is the image-processing approach given in the 15th term of a claim characterized by recognizing whether it is the specific image which the color picture expressed by the color component signal for said record should not carry out image formation.
[Claim 17] Furthermore, the image-processing approach given in the 15th term of a claim characterized by having the image formation process which performs image formation according to the color component signal processed by said down stream processing.
[Claim 18] Said image formation process is the image-processing approach given in the 17th term of a claim characterized by performing image formation in yellow, a Magenta, and the record color of cyanogen at least.
[Claim 19] Said recognition process is the image-processing approach given in the 18th term of a claim to which said image formation process is characterized by performing recognition actuation at the period which is performing image formation in the record color of a Magenta.
[Claim 20] Said image formation process is the image-processing approach given in the 17th term of a claim characterized by forming a color picture in field sequential.
[Claim 21] The storage process which said recognition process extracts each central value of two or more blocks about the description part in a specific image, and is memorized as reference data, The extract process which extracts central value from said color component signal in said block unit, The image-processing approach given in the 15th term of a claim characterized by including the comparison process which compares the reference data memorized by the central value group extracted according to this extract process, and said storage process, and the output process which outputs the comparison result of this comparison process.
[Claim 22] It is the image-processing approach given in the 21st term of a claim to which said storage process memorizes the upper limit and lower limit of central value of each block, and it is characterized by said comparison process judging whether each central value of the inputted color component signal goes into the range of the upper limit of the central value in corresponding reference data, and a lower limit.

[Claim 23] It is the image-processing approach given in the 21st term of a claim which memorizes the reference data of at least two description parts in a specific image at said storage process, and is characterized by judging whether said comparison process inputted the central value which is altogether in agreement with corresponding reference data.
[Claim 24] Said storage process is the image processing approach given in the 21st term of a claim which carries out storage maintenance of the physical relationship of two or more descriptions part in one specific image , and is further characterize by judge whether those physical relationship is also in agreement when it judges with said comparison process exist in the color component signal into which the central value corresponding to all reference data was inputted .
[Claim 25] Said comparison process is the image-processing approach given in the 24th term of a claim characterized by giving and judging a tolerance to physical relationship.
[Claim 26] It is the image-processing approach given in the 21st term of a claim which only the part which carried out predetermined include-angle rotation of the reference data of the description part in one specific image memorizes said storage process, and is characterized by comparing said comparison process with the reference data of each angle of rotation.
[Claim 27] It is the image-processing approach given in the 21st term of a claim which the reference data constituted from central value of a block of different size by said storage process memorize, and said extract process quantizes the inputted color component signal with the block of each size, and is characterized by to compare with the reference data which consist of block data of each size with which the storage maintenance of said comparison process was carried out at the quantization data and said storage process of each size.
[Claim 28] Said comparison process is the image-processing approach given in the 21st term of a claim characterized by comparing the maximum and the minimum value of central value of the block which constitutes the reference data memorized by said storage process with the central value of each block of the color component signal into which it was inputted as tolerance of the whole reference data concerned.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the image processing system and approach an image processing system and an approach, and for identifying the identity of an input image and a specific image in detail.
[0002]
[Description of the Prior Art] By the spread of a digital color copying machine or color printers, high-definition full color printed matter can gain now easily in recent years.
[0003] That is, if it is not a special printer until now, the color printed matter simply demanded also by whom will be obtained by the image processing according impossible printing to a highly

efficient color scanner and a highly efficient computer.
[0004]
[Problem(s) to be Solved by the Invention] However, if the printed matter is high definition more, a problem will occur a certain forge fire. It is the duplicate of the specific manuscript with which the duplicate of a bill, negotiable securities, a stock certificate (only henceforth a security), etc. is forbidden.
[0005] For this reason, although the forged preventive measure of these specific images needed to be devised, decision of the specific manuscript of ** creates reference data from image information, such as a predetermined bill and negotiable securities, beforehand now, and it judged whether input images were a bill, negotiable securities, etc. based on that reference data. Many of these techniques develop input image data on memory, pattern matching, fuzzy reasoning, etc. are performed on that memory, and forgery is detected by extracting the specific focus.
[0006]
[Problem(s) to be Solved by the Invention] However, according to the above-mentioned means, very mass memory will be needed according to the magnitude of the image which an airline printer treats. When performing pattern recognition of the image data passing through especially a serial circuit top, mass memory must be separately prepared for this purpose. Moreover, since each image made into the fragment will be processed and forgery will be recognized when it is going to realize this by little memory, there is a trouble of taking time amount too much.
[0007] This invention is made in view of this trouble, and it is going to offer the image processing system and approach of making it possible to identify identity with a specific image with an easy configuration.
[0008]
[Means for Solving the Problem] In order to solve this technical problem, the image judging equipment of this invention is equipped with the following configurations. That is, it has a 1st generating means generate the color component signal for record, a processing means perform the processing for image formation based on the color component signal for said record, 2nd generating means generate the indication signal which shows the color component which said processing means is processing, and a recognition means recognize correlation with this color component signal and a specific image based on the color component signal for said record according to said indication signal.
[0009] If the suitable operation gestalt of this invention is followed here, as for a recognition means, it is desirable to recognize whether it is the specific image which the color picture expressed by the color component signal for said record should not carry out image formation.
[0010] Furthermore, you may make it have an image formation means to perform image formation according to the color component signal processed by the processing means.
[0011] Moreover, as for an image formation means, it is desirable to perform image formation in yellow, a Magenta, and the record color of cyanogen at least.
[0012] Moreover, as for a recognition means, it is desirable to perform recognition actuation at the period when said image formation means is performing image formation in the record color of a Magenta.
[0013] Moreover, as for an image formation means, it is desirable to form a color picture in field sequential.
[0014] Moreover, a storage means for a recognition means to extract each central value of two or more blocks about the description part in a specific image, and to memorize as reference data, It is desirable to include a comparison means to compare the reference data memorized by an extract means to extract central value from said color component signal in said block unit, and the central value group extracted by this extract means and said storage means, and an output means to output the comparison result of this comparison means.
[0015] Furthermore, a storage means memorizes the upper limit and lower limit of central value of each block, and, as for said comparison means, it is desirable for each central value of the inputted color component signal to judge whether it goes into the range of the upper limit of the central value in corresponding reference data and a lower limit. Even if it is the case where the inputted image becomes dirty somewhat by this, it becomes possible to judge whether it is a

specific image.
[0016] Moreover, for a storage means, the reference data of at least two description parts in a specific image are memorized, and you may make it judge for it whether said comparison means inputted the central value which is altogether in agreement with corresponding reference data. Consequently, since the object to judge became plurality, it becomes possible to raise that dependability more.
[0017] Moreover, it carries out storage maintenance of the physical relationship of two or more descriptions part in one specific image, and it is still still more desirable [said storage means], when it judges with said comparison means existing in the color component signal into which the central value corresponding to all reference data was inputted to judge whether those physical relationship is also in agreement. Consequently, since those positional information can also be judged, it becomes possible to raise the dependability of a judgment result more.
[0018] Moreover, it is desirable for a comparison means to give a tolerance to physical relationship in this case, and to judge. This enables it to perform the judgment, even if the inputted image is the case where it differs from the size of a specific image also with some.
[0019] Moreover, only the part which carried out predetermined include-angle rotation of the reference data of the description part in one specific image memorizes a storage means, and, as for a comparison means, it is desirable to compare with the reference data of each angle of rotation. Since it can judge irrespective of the sense of an input image and the input image itself moreover is not rotated by this, an equipment configuration becomes simple.
[0020] Moreover, the reference data constituted from central value of a block of different size by the storage means are memorized, an extract means quantizes the inputted color component signal with the block of each size, and, as for a comparison means, it is desirable to compare with the quantization data and said storage means of each size with the reference data which consist of block data of each size by which storage maintenance was carried out. Since it can judge with it being also at different spatial frequency by this, it becomes possible to raise the dependability of a judgment result.
[0021] Moreover, you may make it said comparison means compare the maximum and the minimum value of central value of the block which constitutes the reference data memorized by said storage means with the central value of each block of the color component signal into which it was inputted as tolerance of the whole reference data concerned. By this, change of images, such as an edge of an image, will switch and judge an intense part and the part which is not so, and it becomes possible to raise the dependability.
[0022]
[Embodiment of the Invention] Hereafter, the operation gestalt which starts this invention according to an accompanying drawing is explained to a detail.
[0023] First, the configuration and actuation of equipment in an operation gestalt are explained.
[0024] Drawing 22 is the sectional side elevation showing the structure of the color laser beam printer (henceforth CLBP or a printer) 100 of performing image formation and its record according to an electrophotography method based on the multiple-value data with which it has the resolution of 600 dots per inch (dpi) which are the typical operation gestalten of this invention, and each pixel of color component each was expressed by 8 bits.
[0025] In the equipment shown in drawing 22 , the form 102 to which paper was fed from the feed section 101 is ****(ed) by gripper 103f in the tip, and is held at the periphery of the imprint drum 103. At this time, a detector 1008 detects the tip of a form 102 and a Vertical Synchronizing signal (after-mentioned) is generated by that detecting signal. The latent image formed in each color from the optical unit 107 is development-ized by each color development counters Dy, Dc, Db, and Dn, two or more rotation copy is carried out to the form of an imprint drum periphery, and a multi-colored picture image is formed in the image support (henceforth a photoconductor drum) 100. Then, it dissociates from the imprint drum 103, is fixed to a form 102 in the fixing unit 104, and it is discharged by the paper output tray section 106 from a delivery unit 105.
[0026] The development counters Dy, Dc, Db, and Dn of each color have a rotation pivot to the both ends, and each is held pivotable centering on the shaft here at the development counter

optional-feature section 108. By this, each development counters Dy, Dc, Db, and Dn can maintain the posture uniformly, even if the development counter optional-feature section 108 rotates centering on a revolving shaft 110 for development counter selection, as shown in drawing 1 . After the selected development counter's moving to a development location, the development counter optional-feature section 108 is pulled by solenoid 109a in the photoconductor drum 100 direction in the optional-feature maintenance frame 109 focusing on supporting-point 109b by the development counter and one, and moves in the photoconductor drum 100 direction.

[0027] Next, color picture formation actuation of the color laser beam printer of the above-mentioned configuration is explained concretely.

[0028] First, a photoconductor drum 1 is charged in a predetermined polarity with the electrification vessel 111 at homogeneity, on a photoconductor drum 100, the latent image of for example, M (Magenta) color is developed with the development counter Dm of M (Magenta) color by exposure by the laser beam light L, and the 1st toner image of M (Magenta) color is formed on the photo conductor drum 100 of it. While paper is fed to a transfer paper P to predetermined timing, the imprint bias voltage (+1.8kV) of a toner and antipole nature (for example, plus polarity) is impressed to the imprint drum 103 on the other hand and the 1st toner image on the photo conductor drum 100 is imprinted by the transfer paper P, electrostatic adsorption of the transfer paper P is carried out on the front face of the imprint drum 103. Then, M (Magenta) color toner which remains with a cleaner 112 is removed, and latent-image formation and the development process of the following color are equipped with a photoconductor drum 100.

[0029] Next, the 2nd latent image of C (cyanogen) color is formed of the laser beam light L on the photo conductor drum 100, subsequently the 2nd latent image on the photo conductor drum 1 is developed by the development counter Dc of C (cyanogen) color, and the 2nd toner image of C (cyanogen) color is formed. And the 2nd toner image of C (cyanogen) color is imprinted by the transfer paper P according to the location of the 1st toner image of M (Magenta) color previously imprinted by the transfer paper P. In the imprint of the toner image of these two amorous glance, just before a transfer paper P reaches the imprint section, +2.1kV bias voltage is impressed to the imprint drum 103.

[0030] Similarly, sequential formation of the 3rd and 4th latent image of Y (Hierro) color and Bk (black) color is carried out on the photo conductor drum 100, alignment of each is carried out to the toner image which sequential development was carried out with development counters Dy and Db, and was previously imprinted by the transfer paper P, and the sequential imprint of each 3rd [of Y (Hierro) color and Bk (black) color] and 4th toner image is carried out. Thus, it will be formed after the toner image of four colors has lapped on a transfer paper P. In the imprint of the toner image of these 3 amorous glance and four amorous glance, just before a transfer paper reaches the imprint section, bias voltage (+2.5kV and +3.0kV) is impressed to the imprint drum 103, respectively.

[0031] Thus, whenever it imprints the toner image of each color, imprint bias voltage is made high for preventing decline in imprint effectiveness. The main causes of a fall of this imprint effectiveness are to charge the front face of a transfer paper in imprint bias voltage and reversed polarity by aerial discharge (for the imprint drum front face which is supporting the transfer paper to also be charged a little), accumulate this electrification charge for every imprint, and for imprint electric field fall for every imprint that imprint bias voltage is fixed, when separating from a photoconductor drum 100 after a transfer paper's imprinting.

[0032] the imprint bias and like-pole nature which were impressed on the occasion of the imprint of the four above-mentioned amorous glance when a transfer paper tip arrived at an imprint starting position, and were impressed to the effective alternating voltage of 5.5kV (a frequency is 500Hz) (including immediately after just before) at the time of the imprint of the 4th toner image -- and the direct-current bias voltage of +3.0kV of same electric potential is made to superimpose, and it is impressed by the electrification machine 111. Thus, when a transfer paper tip arrives at an imprint starting position on the occasion of the imprint of four amorous glance, it is for preventing imprint nonuniformity to operate the electrification machine 111. Since it is easy to be conspicuous as a difference in a color even if slight imprint nonuniformity occurs

especially in the imprint of a full color image, it is needed to impress necessary bias voltage to the electrification machine 111, and to make discharge actuation perform, as mentioned above.
[0033] Then, when the point of the transfer paper P with which the superposition imprint of the toner image of four colors was carried out approaches a separation location, the separation pawl 113 approaches, and that tip contacts the front face of the imprint drum 103, and makes a transfer paper P separate from the imprint drum 103. The tip of the separation pawl 113 maintains a contact condition with an imprint drum front face, separates from the retrodisplacement copy drum 103, and returns to the original location. While the electrification machine 111 operates until the transfer paper back end separates the imprint drum 111 from from, when the tip of a transfer paper arrives at the imprint starting position of the last color (the 4th amorous glance) as mentioned above, and it discharges the stored charge on a transfer paper (a toner and antipole nature) and making easy separation of the transfer paper by the separation pawl 113, the aerial discharge at the time of separation is decreased. In addition, when the back end of a transfer paper arrives at an imprint termination location (outlet of the nip section which a photoconductor drum 100 and the imprint drum 103 form), imprint bias voltage impressed to the imprint drum 103 is turned OFF (touch-down potential). Bias voltage which could come, simultaneously was being impressed to the electrification machine 111 is turned OFF. Next, it is conveyed by the fixing assembly 104, it is fixed to the toner image on a transfer paper here, and the separated transfer paper P is discharged on a paper output tray 106.
[0034] Next, actuation of the image formation by laser beam scan is explained.
[0035] In drawing 22 , 107 is an optical unit and is constituted by a detector 1009, semiconductor laser 120, the polygon mirror 121, the scanner motor 122, the lens 123, and the mirror 125. If paper is fed to the recording paper P and the tip is conveyed by the imprint drum, synchronizing with it, the picture signal VDO for 1 page will be outputted to semiconductor laser 120, light beam L modulated by the picture signal VDO will be injected towards the polygon mirror 121 rotated by the scanner motor 122, and the injected light beam L will be led to a photoconductor drum 100 by the lens 123 and the mirror 125. Moreover, if light beam L is injected, light beam L will be detected by the detector 9 arranged on a horizontal-scanning shaft, and BD (beam detection) signal used as a Horizontal Synchronizing signal is outputted. Consequently, synchronizing with BD signal, scan exposure of the photoconductor drum 100 is carried out by light beam L, and an electrostatic latent image is formed.
[0036] The color laser beam printer of this example performs an image output in the resolution of 600 dots per inch (dpi) through the above image formation processes.
[0037] As input data of this equipment, the color picture data (for example, Y, M, C, concentration image data expressed of Bk component) generated with a host computer (henceforth a host) can be considered. For this reason, as shown in this equipment at drawing 23 , the signal-processing section 1004 which processes the printer controller 1002 which receives the command (1005) for the image information from a host or image formation, and generates image data, and its image data is formed.
[0038] With the operation gestalt explained here, the color picture data sent by the host are considered as input data.
[0039] Drawing 23 is the block diagram showing the functional configuration of the printer 100 according to this example. In drawing 23 , a printer 100 receives the image information sent as command data of PDL as concentration image data for every color component from a host computer (henceforth a host) 2000, and consists of the printer controllers 1002 and printer engine 1003 which output this as a YMCBk picture signal 1006 with which each color component consists of 8 bits (D0-D7). Therefore, the value of each of each color component takes the value of 0-255.
[0040] Between a printer controller 1002 and printer engine 1003, various signals are delivered and received in the form of serial communication besides picture signal 1006. The page (direction of vertical scanning) synchronizing signal (PSYNC) sent out to these signals from printer engine 1003 at a printer controller 1002, the synchronizing signal (LSYNC) of a main scanning direction, and clock for data transfer (VCLK) It is. A printer controller 1002 is a clock (VCLK) for data transfer about the 8-bit signal of each color component of a picture signal 1006. It outputs

synchronously.
[0041] Drawing 24 is the block diagram showing the functional configuration of the printer engine 1003 according to this operation gestalt. In drawing 24 , uniform rotation of the scanner motor 122 is carried out by the motor control circuit 1012 (the well-known phase control circuit which is not illustrated is built in) so that dividing of the reference clock from the criteria oscillator 1010 contained in the optical unit 107 may be carried out by the counting-down circuit 1011 and phase contrast of a dividing clock and the feedback signal from the scanner motor 122 may be made into predetermined phase contrast. And rotation of the scanner motor 122 is transmitted to the polygon mirror 121, and uniform rotation of the polygon mirror 121 is carried out.
[0042] On the other hand, uniform rotation of the imprint drum 103 is carried out by the drive motor (un-illustrating), the tip of the recording paper P on the imprint drum 103 is detected by the detector 1008, and a Vertical Synchronizing signal (VSYNC) is outputted to the signal-processing section 1004. And the image tip of each color is prescribed by the Vertical Synchronizing signal (VSYNC). After a Vertical Synchronizing signal (VSYNC) is outputted, synchronizing with BD signal, a picture signal (VDO) is sent out to semiconductor laser 120 one by one by making into a Horizontal Synchronizing signal (HSYNC) BD signal generated by the detector 1009.
[0043] Moreover, CPU1014 which the signal-processing section 1004 builds in performs a printer controller 1002 and serial communication, exchanges control signals, and synchronizes actuation of a printer controller 1002 and printer engine 1003.
[0044] The timing of the above-mentioned Vertical Synchronizing signal (VSYNC) in an image formation process, a Horizontal Synchronizing signal (BD), and the picture signal (VDO) of four concentration color components (YMCBk) comes to be shown in drawing 25 .
[0045] Drawing 26 is the block diagram showing the configuration of the signal-processing section 1004. The signal-processing section 1004 is divided roughly into the Rhine memory 1020, the pattern recognition section 1021, and the halftone processing section by PWM.
[0046] The Rhine memory 1020 carries out actuation read with the image clock (PCLK) of printer engine 1003, after storing the multiple-value image data (D0-D7) sent out from a printer controller 1002 with the clock (VCLK) for data transfer.
[0047] Moreover, the halftone processing section by PWM consists of gamma amendment section 1022, a D/A transducer 1023, a comparator 1024, and the triangular wave generating section 1025. And gamma amendment of the multiple-value image data from the Rhine memory 1020 is done in gamma amendment section 1022, and after being changed into an analog signal by the D/A transducer 1023, it is inputted into the plus input terminal (+) of a comparator 1024. On the other hand, the output signal of the triangular wave generating section 1025 which generates a triangular wave signal based on the clock of an image clock (PCLK) is inputted into the negative input terminal (-) of a comparator 1023.
[0048] And a comparator 1023 compares these 2 signal and generates the signal of the pulse width according to a multiple-value picture signal. From a comparator 1023, an PWM signal for resolution to form the image of 600dpi is sent out as a picture signal (VDO) to semiconductor laser 121.
[0049] Now, the pattern recognition section 1021 reads the reference data stored in the memory 1026 of non-volatiles, such as EEPROM, based on the control signal 1027 from CPU1014 through a signal line 1028, compares this data with input multiple-value image data, and investigates whether the input multiple-value image contains the specific image.
[0050] The operation gestalt of the pattern recognition section 1021 mentioned above is explained below.
[0051] <Operation gestalt of ** 1st> drawing 1 is the block block diagram showing a part for the principal part in the 1st operation gestalt (pattern recognition section 1021).
[0052] In drawing 1 , the blocking section 1 receives as an input a digital image 4 (signal from the Rhine memory 1020 explained previously) from a serial line 5. The blocking section 1 changes a digital image 4 into the quantization data showing the average concentration of every block (square whose one side is 256 pixels with this operation gestalt) of predetermined magnitude, makes it serial data, and is ****** to a comparator 2. In a comparator 2, the quantization data 6

from the blocking section 1 are compared with the reference data 8 from the reference data division 3, and the result of whether the image pattern with which the digital image 4 is registered into the reference data division 3 is included is outputted. In addition, the image read with the image scanner is sufficient as a digital image 4, and the image created with the application software on a host computer is sufficient as it. Moreover, you may receive through a circuit.

[0053] Next, blocking of a digital image is explained in detail.

[0054] Drawing 2 is drawing showing the outline of the blocking processing in the blocking section 1 in drawing 1 . As shown in drawing, the average value of the concentration of the pixel within a block is calculated for every 256-pixel one-side block [square], and let the average value be the value for 1 block of a blocking image.

[0055] Next, the reference data stored in the reference data division 3 in an operation gestalt are explained.

[0056] Reference data consist of block data obtained by the same approach as it is carried out by the above-mentioned blocking section 1 in the field containing the description part of specific images (only henceforth a specific image), such as negotiable securities like drawing 3 . Here, one reference data is expressed with data of 5x5 blocks, i.e., the average concentration value of 25 pieces, (each average concentration value shows the average value of the pixel concentration of a 256x256-pixel block).

[0057] Drawing 4 shows the concrete data storage format of the reference data division 3 in an operation gestalt. Like illustration, the reference data used as each description part are stored about two or more specific images.

[0058] Next, the approach of the pattern recognition in a comparator 2 is described in detail. In addition, this comparator 2 consists of a CPU, a ROM, and RAM, and the software which performs the following procedure is memorized by this ROM.

[0059] Hereafter, the pattern recognition processing in a comparator 2 is explained to a detail according to the flow chart of drawing 5 .

[0060] A comparator 2 reads the quantization data (it is serial data and a blocking image is expressed) showing the average concentration value of 256x256 pixels from the blocking section 1 per one line (step S1). Thus, because they are received from the blocking section 1, having used as serial data the quantization data of the image which is originally two-dimensional data, it reads per one line.

[0061] After reading the quantization data for one line, it separates to two kinds of processings according to the condition of pre- processing. That is, when the reference pattern which has the part which is in agreement with an input image is already detected, an input image and consistency are investigated about the remaining part of a reference pattern, and when that is not right, the existence of a reference pattern which has the part which is in agreement with an input image is investigated.

[0062] That is, it distinguishes whether the reference pattern with which the reference pattern which has the part which is in agreement with an input image was already detected, and was set up as under recognition at step S2 exists. Consequently, if the reference pattern set up as under recognition does not exist, it distinguishes whether it progresses to step S8 and the quantization data for whether the reference pattern which has the part which is in agreement with an input image exists, and one line which were read exist in the reference data division 3.

[0063] Consequently, if it does not exist, return and the following blocking image data for one line are read into step S1. If the reference pattern which, on the other hand, has the part which is in agreement with an input image exists, while setting up as a reference pattern while recognizing the class of the reference pattern, the coincidence check location of a degree is set up (step S9), and return and the following quantization data for one line are read into step S1. In addition, although the number of the row and column of the blocked reference pattern is memorized as a coincidence check location of a degree, "2" is set up in order to perform the coincidence check of the 2nd line next about a line here, and the number of the train which began to be in agreement with the input image is set up fixed about a train. That is, although renewal of sequential is carried out about a line number so that clearly from the below-

mentioned explanation, a row number is not updated, but is set up fixed and check processing of coincidence with an input image is performed about the block of the train after the row number applied to a setup in the line concerned.
[0064] When the reference pattern set up as under a check at step S2 existed and it is distinguished, the reference data of a block of the train after the row number concerning a setup of the line concerning a setup of the reference pattern under the check distinguish whether it is contained in the blocking image data for one read line (step S3). Consequently, the reference data of each block of the train after the row number concerning a setup of the line concerning a setup of the reference pattern under check When contained in the blocking image data for one read line When it distinguishes whether it was in agreement in all the lines (this operation gestalt five lines) of the two-dimensional reference pattern under check (step S4) and is in agreement in all lines The signal of the purport which are specific images, such as detection of a registration pattern (reference pattern), i.e., the registered bill, and negotiable securities, is outputted (step S5).
[0065] On the other hand, when still in agreement in no lines, only one line number of the coincidence check location of a degree is updated (step S6). And it distinguishes whether coincidence check processing at step S3 was completed about all the reference patterns under check (step S7). Consequently, if it has completed, coincidence check processing will be performed to step S3 about return and the following pattern. On the other hand, when coincidence check processing is completed about all patterns, it progresses to the above-mentioned step S8, and it is confirmed whether other reference patterns which have the part which is in agreement with an input image exist.
[0066] In addition, when the reference data of a block of the train after the row number concerning a setup of the line which starts a setup of the reference pattern under check at step S3 were not contained in the blocking image data for one read line and it distinguishes, it progresses to step S7 in order to perform coincidence check processing about the following pattern.
[0067] Without developing the pattern recognition of the digital image by which a serial transmission is carried out in mass memory according to this operation gestalt, as explained above, since a high speed and the nest of pattern recognition equipment can carry out easily and according to low cost become possible, it becomes possible to build the means of forged prevention not only into a copying machine but into airline printers, such as a color printer, easily.
[0068] In addition, with the above-mentioned operation gestalt, as a configuration of reference data, although [1 block] 256 pixel around and one reference data are 5 blocks around, it is not limited to this but may use the reference data of other magnitude consistencies. The dependability increases, so that there is much block count which constitutes reference data especially (for example, 9-block Hitoshi Shikata).
[0069] Moreover, as a value to refer to, other parameters representing blocks, such as a maximum-density value of not only the average concentration of the pixel within a block but the pixel within a block, may be used. For example, a hue, saturation, or they consider all and you may make it judge. If it carries out about two or more components especially, the dependability will improve more.
[0070] Although quantization data were made into those with pattern detection with the operation gestalt of the <explanation of 2nd operation gestalt> above 1st when in agreement as completely as reference data For example, an input image is read with an image scanner. Dirt etc. adheres to the front face of the specific image at the time of the reading, and when the location is in the part registered as reference data by chance, it stops being able to carry out pattern detection with the operation gestalt of the above 1st.
[0071] Then, the example which copes with it also in this case is explained as 2nd operation gestalt. In addition, the configuration for the principal part is made into the same thing as drawing 1 of the operation gestalt of the above 1st, and the explanation is omitted.
[0072] Drawing 6 shows one reference data in the operation gestalt of **** 2. The operation gestalt of **** 2 is characterized by the point of having given a certain amount of width of face

to the value (average concentration value) of each block which constitutes reference data, like illustration.
[0073] In addition, this width of face extracts the block image data (quantization data) of the respectively same location from two or more specific images (however, the degrees of dirt differ) of a class like the 1st operation gestalt, and determines each maximum and minimum value or these maximum +alpha, and minimum value-beta (alpha and beta are a predetermined value) as each upper limit and lower limit.
[0074] Now, in steps S3 and S8, although it is processing of a comparator 2, since the place which judges whether it goes into the range of the reference data in which quantization data have a upper limit and a lower limit is only different, other explanation is omitted among the flow chart in drawing 5 .
[0075] As explained above, since the nest of a high speed and forged recognition equipment can carry out easily and according to low cost becomes possible about the pattern recognition of the digital image which comes from a serial line, according to the operation gestalt of **** 2, it becomes possible to build the means of forged prevention not only into a copying machine but into airline printers, such as a color printer, easily. Since width of face is given to the value of reference data, it is effective especially when there is the need of permitting a certain amount of error especially.
[0076] In addition, with the 2nd above-mentioned operation gestalt, as a configuration of reference data, although [1 block] 256 pixel around and one reference data are 5 blocks around, it is not limited to this but may use the reference data of the consistency of other magnitude. Moreover, one effective natural is the same as that of the 1st operation gestalt explained previously, and not only average concentration but its thing to compare using other parameters (the maximum concentration, concentration of the maximum frequency, etc.) is completely the same also after the following operation gestalt [3rd].
[0077] With the operation gestalt of <operation gestalt of ** 3rd> **** 3, it is going to raise detection precision by it being not only in agreement with each, but preparing the reference pattern with which the plurality corresponding to the location where it differs on a specific image differs to one specific image, and taking the physical relationship into consideration.
[0078] The block configuration of equipment is the same as that of what was shown in drawing 1 . Moreover, since it is the same as that of the approach which also explained the method of creating the reference data corresponding to a specific image with the first operation gestalt, the explanation to these is omitted.
[0079] Drawing 7 shows the example of the reference data used in the operation gestalt of **** 3.
[0080] In this drawing, the 1st pattern and the 2nd pattern shall be reference data obtained from two description parts chosen from the specific image, and these parts shall be horizontally located in a line on the real image, and the vertical position shall be in agreement. Here, two patterns standardize a horizontal distance between pixels taken on a real image by 256, and R has a unit equal to the 1-block unit of a reference and a blocking image.
[0081] Although the means of pattern matching used with the operation gestalt of **** 3 is equal to the approach fundamentally stated with the 1st operation gestalt, since the functions of the parts of S3 and S8 in drawing 5 differ, it explains this.
[0082] With both the operation gestalten of **** 3, only when the location on the blocking image with which the comparison result of the 1st reference pattern and the 2nd reference pattern is truth, and those recognition was performed is in agreement with R, the transition to S4 from S3, or S8 - S9 occurs, and when it is others, it becomes the transition to S9 from S3 to S7, or S8.
[0083] Since it stated above, the precision of recognition can be raised using two reference data in process of pattern matching by investigating each coincidence degree and applying the distance relation to consideration.
[0084] In addition, although horizontally relative physical relationship was taken into consideration in the above-mentioned example As shown in drawing 8 (I), it not only creates and registers the reference data of the description part of plurality (illustration two) about one specific image, but It not only says that the same part as these two description parts was only

detected, but it registers relative physical relationship of these descriptions part about the two-dimensional direction (Lx of illustration, Ly), and you may take into consideration the physical relationship of the two-dimensional direction.
[0085] The data format stored in the reference data division 3 in this case becomes like drawing 8 (II). In addition, Lx in illustration and Ly shall show the relative position of the reference data b on the basis of the location of the reference data data a. In addition, you may make it each block data in these two reference data have only one value, as the 1st operation gestalt explained, and may make it give width of face like the 2nd operation gestalt.
[0086] moreover, both the reference data a and the reference b detect judgment processing -- having -- in addition -- and the case where the distance of each pattern becomes equal to Lx of the reference data, and Ly -- as long as -- it judges with an input image being a specific image. Since it is the same as that of the 1st operation gestalt explained previously whether it is in agreement with each reference data, the explanation is omitted. However, since it is necessary to also detect the location of the direction of the y-axis, it is necessary to secure the variable for it to RAM.
[0087] When a specific image is reduced [expansion or] twice to general <operation gestalt of ** a 4th> 1/2, it is easy for the expansion or a contraction image to distinguish many persons from a original specification image. However, when it doubles 0.95-1.05 to about 5% of expansion or contraction, i.e., a subject-copy image, to a original specification image, unless it is very careful, distinction does not stick. The operation gestalt of **** 4 copes with this.
[0088] For this reason, the operation gestalt of **** 4 attains by giving predetermined width of face to the relative-position information Lx and Ly when two or more reference data which can be set in the 3rd operation gestalt explained previously are in agreement. This width of face may be immobilization and you may enable it to change it suitably.
[0089] However, when it expands or reduces, since changing with the scale factor or reduction percentage is expected, it is desirable [the value of each block data (concentration average of 256x256 pixels) obtained from the image] like the 2nd operation gestalt to establish a certain amount of range in block data.
[0090] processing -- ****** -- the -- three -- operation -- a gestalt -- it can set -- a judgment -- processing -- the -- a reference -- data division -- three -- specifying -- having -- Lx -- Ly -- actually -- an image -- inputting -- detecting -- having had -- a reference -- data -- being in agreement -- a part -- distance -- Lx -- ' -- Ly -- ' -- relation -- setting -- the latter -- the former -- tolerance -- containing -- having -- a ******** -- even judging -- since what is necessary is just to carry out, the explanation is omitted.
[0091] Since it stated above, in process of pattern matching, using two reference data, each coincidence degree is investigated, and the distance relation is applied to consideration, and it is effective in the ability to cope with the variable power of a reading error or an input image by preparing a margin, in case distance relation is compared.
[0092] <The 5th operation gestalt>, next the 5th operation gestalt are explained. Drawing 9 shows the block configuration of the identification unit in the operation gestalt of **** 5. What has the function same among drawing as the 1st operation gestalt explained previously attaches the same number, and explanation is omitted.
[0093] The 1st operation gestalt explained the case where the data which quantized digital image data with average concentration for every block of predetermined magnitude were recognized by comparing with the reference data 8 outputted from the reference data division 3. In this operation gestalt, it is made to recognize by inputting a color specification signal into the reference data division 3 by using the reference data of a monochrome plane in which the description of the specific image inputted is shown.
[0094] The digital image 4 inputted from a serial line 5 in drawing 9 is inputted synchronizing with a color specification signal as a Magenta (M), cyanogen (C), yellow (Y), and Junji Men data of black (K), the readout location of reference data is specified by said color specification signal, and the reference data division 3 output the reference data 8 section to a comparator 2.
[0095] That is, to one specific image, it is storage-held or the reference data of these four color components are registered into the reference data division 8.

[0096] In a comparator 2, the same processing as the 1st operation gestalt is performed about these four color components, and when a coincidence pattern is detected in the four processings of all, it judges with an input image being a specific image. Moreover, since the processing after it becomes unnecessary when the judgment of the specific image about one color component is denied in process of the processing, processing is finished on that spot.
[0097] In addition, like the 2nd operation gestalt, you may make it give a certain amount of width of face to the reference data division 8, or the same processing as the operation gestalt of/and the 3rd, and 4 may be added to them.
[0098] Moreover, it may not identify about the color component of four colors as mentioned above, but recognition which referred to reference data only about Magenta 1 color may be performed based on a color specification signal.
[0099] In this case, since reference data are not memorized by monochrome (for example, Magenta) according to the class of specific image, memory can be used efficiently, and improvement in the speed of recognition can be realized further. In addition, not only a Magenta but a cyanogen component may be used.
[0100] According to the 5th operation gestalt, in the so-called Junji Men type of image formation equipment, accurate discernment is attained according to a formation color above.
[0101] <the 6th operation gestalt> -- the 6th operation gestalt is explained. The configuration in the operation gestalt of **** 6 is made into the same thing as the 1st operation gestalt, and the explanation is omitted.
[0102] Now, with the operation gestalt of **** 6, even if the inputted image data is not in agreement with the storage direction of the reference data division 3, it is recognized. That is, even if the sense of an input image is not the same direction uniformly, it is going to perform the judgment.
[0103] The block block diagram of the 6th operation gestalt of this invention is the same as that of drawing 1 . The operation gestalt of the above 1st explained the case where the data which quantized digital image data with average concentration for every block of predetermined magnitude were recognized by comparing with the reference data 8 outputted from the reference data division 3. In this operation gestalt, since it corresponds when the specific image inputted shifts an include angle and is inputted, the reference data division 3 are made to memorize the reference data 8 for every angle of rotation, and it recognizes, using each data one by one.
[0104] As shown in drawing 10 , rotate per a total of 59 pieces, i.e., 6 degrees, reference data are made to read into the reference data division 3 per specific image, and, specifically, reference data are created and registered into them.
[0105] Therefore, by the comparator 2, when judging the inputted image, it compares with each reference data. In addition, even if it rotates the inputted image and compares with one reference, the same effectiveness is acquired, but in order to carry out rotation processing of the inputted image in this case, rotation processing takes time amount and a configuration becomes complicated. On the other hand, it becomes [the rotation processing carried out the direction of the operation gestalt of **** 6 which carries out storage registration of the reference data to refer to beforehand] unnecessary and is advantageous.
[0106] Moreover, since the angle of rotation is called for from the reference data at the time of judging that the pattern was in agreement at least when adapted for the operation gestalt of **** 6 in the 3rd or 4th operation gestalt (beforehand registered in order of an include angle), according to it, it is necessary to change the value of Lx and Ly.
[0107] It becomes possible to recognize, even when according to the operation gestalt of **** 6 a specific image gives an include angle and is inputted, as explained above.
[0108] <the 7th operation gestalt> -- the 7th operation gestalt is explained. The block block diagram of the operation gestalt of **** 7 is shown in drawing 11 . In addition, in illustration, what has the same function as the 1st operation gestalt attaches the same number, and explanation is omitted.
[0109] The operation gestalt of the above 1st explained the case where the data which quantized digital image data with average concentration for every block of predetermined magnitude were recognized by comparing with the reference data 8 outputted from the reference

data division 3. In this operation gestalt, two or more templates from which the magnitude of blocking processing differs to one kind of specific image are prepared, and it is comparing, respectively and is characterized by the point of recognizing.
[0110] The digital image 4 inputted from a serial line 5 in drawing 12 is inputted into the blocking section 1 and the blocking section 71, respectively, and the same processing as the 1st operation gestalt is carried out, and the blocking section 1 differs in the magnitude of the blocking section 1 and block processing, and performs the blocking section 71.
[0111] For example, the blocking machine 1, it processes by 256 pixel x256 pixel, and processes by 64 pixel x64 pixel with the blocking vessel 71. The output signal of the blocking section 71 is inputted into a comparator 72, and is compared with reference data like a comparator 2. Although the reference data inputted into a comparator 72 are performed synchronizing with processing of the blocking machine 71 at this time though natural, the reference data from the reference data division 3 input and judge the reference data which consist of average values of a 64x64-pixel block. That is, storage registration of the reference data which consist of blocks of the same size as the 1st operation gestalt, and the reference data which consist of blocks of size finer than it is carried out at the reference data division 3.
[0112] The comparison result from each comparator 2 and 72 takes an AND in the AND section 73 by AND 73, and is outputted as a judgment result with final it.
[0113] In this AND section 73, the class of reference data judged that carried out pattern coincidence by the comparator 2, and it from a comparator 72 are inputted, and whether they are mutually the same judges. for example, in one comparator 2, it is judged that it was in agreement with the negotiable securities A of drawing 4 -- having -- another comparator 72 -- said -- when it is judged that it was in agreement with B, since they will not be in agreement, naturally they output that.
[0114] It becomes possible to carry out the comparative judgment of two or more information that the spatial frequency of a certain specific image differs, by the above actuation. And the discernment precision of a specific image can be sharply raised according to the operation gestalt of **** 7, using the description of a specific image more effectively.
[0115] Moreover, with the above-mentioned operation gestalt, since actuation of a comparator 2 and a comparator 72 is arranged in parallel and performed, it becomes discriminable [a high speed].
[0116] The block configuration of the 8th operation gestalt is shown in <the 8th operation gestalt>, next drawing 12 , and the explanation is given.
[0117] Drawing 12 is the block block diagram showing the 8th operation gestalt of this invention. What has the same function as the operation gestalt of the above 1st attaches the same number among drawing, and explanation is omitted. The operation gestalt of the above 1st explained the case where the data which quantized digital image data with average concentration for every block of predetermined magnitude were recognized by comparing with the reference data 8 outputted from the reference data division 3. In the operation gestalt of **** 8, it is choosing the magnitude of blocking processing for every specific image, having a different template in it, and comparing with it, respectively, and will recognize.
[0118] The digital image 4 inputted from a serial line 5 in drawing 12 is inputted into the blocking section 1 and the blocking section 81, respectively, the processing as the 1st operation gestalt that the blocking section 1 is the same is carried out, and the blocking section 81 processes by differing in the magnitude of the blocking section 1 and block processing like the 7th operation gestalt. The output signal of the blocking section 1 and the blocking section 81 is inputted into a switching circuit 82, respectively. The output signal of a switching circuit 82 is inputted into a comparator 2. From the reference data division 3, a control signal is outputted to a switching circuit 82 so that the blocking machine corresponding to the data may be chosen. A switching circuit 82 chooses the output signal of the blocking section 1, or the output signal of the blocking section 81 based on said control signal, and outputs it to a comparator 2. The same processing as the operation gestalt of the following 1st is performed.
[0119] It becomes possible to identify by the above actuation using the information on spatial frequency were suitable for a certain specific image.

[0120] According to this operation gestalt, since the comparison detection of the description can be more efficiently carried out according to a specific image class in the batch which can be compared, the detection precision of two or more specific images improves sharply.
[0121] In the 6th operation gestalt explained to the <operation gestalt of ** 9th> point, have reference data in the reference data division 3 for every fixed include angle from 0 times to 360 degrees, and although the comparison with the specific image data inputted was performed With the operation gestalt of **** 9, in order to attain reduction of reference data, the data from 0 times to 90 degrees are memorized for the reference data for every include angle, and the reference data from 90 degrees to 360 degrees are created by performing rotation processing. That is, the amount of reference data tends to be set to one fourth, and it is going to realize the reference data division 3 by small memory space.
[0122] When generating reference data from a specific image, first, reference data are generated about 0 degree, and the rest is leaned every 6 degrees, inputs a specific image, and creates and registers the reference data about each include angle. Consequently, a total of 14 reference data (0 degree and 6 degrees -- 84 degrees) are obtained. Moreover, what is necessary is for the arrangement location of each block of the reference data in 0 degree to only change, and just to change the sequence after read-out of reference data, as shown in drawing 14 180 degrees or when rotating 90 degrees, and rotating 270 degrees.
[0123] similarly, it comes out, and it carries out and 96 degrees is obtained by the thing which can understand what should just utilize 6-degree reference data, which will exist and for which 0 degree - 84 degrees reference data are referred to about other angles of rotation.
[0124] So, with the operation gestalt of **** 9, it considered as the block configuration as shown in drawing 13 .
[0125] The rotation section 91 changes the location of the block image of reference data of 0 times (Original), and is changed into data of 90 degrees, 180 degrees, and 270 degrees, respectively. Moreover, it becomes possible similarly to create reference data (96 degrees, 186 degrees, and 276 degrees) only by changing the sequence after 6-degree read-out of reference data.
[0126] The flow of processing is as follows.
[0127] A comparator 2 specifies reference data as the code which means an angle of rotation to the rotation section 91. According to the above-mentioned explanation, the number of angles of rotation is four, and since it is a good reason, it will be based on 0 times by the code at the time of 00B (B shows a binary digit). Moreover, the reference data with which the sequence after read-out from the reference data division 3 was changed on the basis of 270 degrees at the time of 180 degrees and 11B, and 90 degrees was specified at the time of 10B are outputted to a comparator 2 at the time of 01B.
[0128] A comparator 2 outputs the discernment result as compared with the reference data obtained with outputting a rotation signal to the rotation section 91, and the inputted block data. Others perform the same processing as the 1st operation gestalt.
[0129] As explained above, according to the operation gestalt of **** 9, the reference data stored in the reference data division 3 may come for 84 degrees to be sufficient from 0 times, and it becomes possible to raise the utilization ratio of the part and memory.
[0130] In addition, include-angle spacing of reference data may not be limited to 6 degrees, and may be less than [it], for example, may be more than it. However, although it will become possible more to raise dependability if include-angle spacing is small, only the part increases memory space.
[0131] With the operation gestalt of <operation gestalt of ** 10th> **** 10, vertical width of face of the value of block ** of the reference data shown with the 2nd operation gestalt explained previously is made into the maximum of 5x5 blocks, and the minimum value.
[0132] As shown in drawing 15 (A) and (B), let the minimum value in 5x5 blocks, and maximum be the upper limit and a lower limit.
[0133] Therefore, it considers that the error of the digital image 104 shown in drawing 15 (A) when fluctuation of data was large, as been the edge of an image etc. and shown with the 2nd operation gestalt, for example within the block of 5x5 is large, and the error at the time of being

recognition is enlarged. Moreover, when there is little fluctuation of data as shown in drawing 17 (B), a digital image 104 is a flat part, it considers that an error is small and the error at the time of being recognition is made small.
[0134] Others perform the same processing as the 2nd operation gestalt.
[0135] Recognition precision can be raised by carrying out adjustable [of the error span in the judgment of coincidence of a pattern] according to the description of a specific image according to this operation gestalt. That is, about a part with large fluctuation, an incorrect judging can be decreased by enlarging an error span like the edge section in an image.
[0136] It enables it to input from the exterior the upper limit of the reference data of the 2nd operation gestalt explained previously, and a lower limit with the operation gestalt of <operation gestalt of ** 11th> **** 11.
[0137] The block configuration of the 11th operation gestalt is shown in drawing 16 . Like illustration, width-of-face data are given to a comparator 2 from an external controller (if the equipment of an operation gestalt is an airline printer, it is the control panel, host computer, etc.).
[0138] A comparator 2 makes a lower limit what subtracted what was added by width-of-face data to each block image by the upper limit and width-of-face data, and performs the same processing as the 2nd operation gestalt.
[0139] According to this operation gestalt, by giving width-of-face data from the exterior to reference data, as shown in drawing 17 from the exterior, it can carry out adjustable [of the width of face (recognition precision) of reference data] to real time.
[0140] <Operation gestalt of ** 12th> drawing 18 is the block diagram showing the outline configuration of the pattern recognition equipment by the 12th operation gestalt of this invention, and this pattern recognition equipment has the blocking section 1, a comparator 2, the reference data division 3, and the input signal Monitoring Department 9.
[0141] The configuration of the blocking section 1, a comparator 2, and the reference data division 3 and actuation are the same as that of an above-mentioned example. The input signal Monitoring Department 9 supervises change in the pixel unit of the input signals (digital image data 4 etc.) inputted through the serial line 5, did the illustration abbreviation of the supervisory signal 10, and does a printing control-section HE output.
[0142] Although pattern recognition processing was performed and the forged action is detected like an above-mentioned example, when this detection processing also has an input signal intercepted intentionally, it will become that which is completely meaningless. So, at the input signal Monitoring Department 9, when there is no change in data for a certain set-up period as compared with a front input signal about an input signal, an input signal judges with what is intercepted intentionally, and outputs a supervisory signal to that effect to a printing control section. In this case, a printing control section (illustration abbreviation) is black, and smears away, or is controlled to forbid the normal printing actuation of stopping a process means etc., and prevents a forged action beforehand.
[0143] That is, the input signal Monitoring Department 9 is constituted as shown in drawing 19 , and a comparator 52 compares an input digital picture signal with the signal of the front pixel outputted by the latch 51, and when in agreement, in the case of an inequality, it outputs an inequality signal ("!=" in drawing) for a coincidence signal ("=" in drawing) to a counter 53. A counter 53 counts up only "1", when a coincidence signal is inputted, and when an inequality signal is inputted, it resets counted value. The predetermined value is beforehand set to this counter 53, and when counted value reaches a set value, in order to make pattern recognition processing by the blocking section 1, the comparator 2, and the reference data division 3 into impossible, the supervisory signal of a purport with which the forged recognition circuit was intercepted is outputted to a printing control section as a thing which had the input signal intercepted intentionally.
[0144] Like before, without developing input image data on memory with this operation gestalt, performing pattern matching and fuzzy reasoning on memory, and extracting the focus of a bill and negotiable securities thus, by circuitry like drawing 18 Since pattern recognition of the digital image inputted from the serial line is performed Forged recognition can be performed by the high

speed and low cost, the forged action by circuit cutoff on purpose with a still easier configuration can also be prevented beforehand, and it may carry not only in a copying machine but in airline printers, such as a color printer, enough from a viewpoint of cost or an equipment scale.

[0145] <Operation gestalt of ** 13th> drawing 20 is the block diagram showing the outline configuration of the pattern recognition equipment by the 13th operation gestalt of this invention. This pattern recognition equipment It has the communications department 11 instead of the input signal Monitoring Department 9 of the 12th operation gestalt shown in drawing 18 . When all the pattern recognition units that consist of the blocking section 1, a comparator 2, reference data division 3, and the communications department 11 are removed intentionally, it enables it to judge the printing control section (illustration abbreviation) which controls the printing section for that. In addition, pattern recognition processing by the blocking section 1, the comparator 2, and the reference data division 3 is performed completely like the 1st operation gestalt.

[0146] Between the communications department 11 and a printing control section, data communication is performed with the time interval set up beforehand, and if the 8-bit code of "10101010" is received from a printing control section, the communications department 11 will reverse this code and will transmit the code of "01010101" to a printing control section. In addition, it is also possible to plan security more certainly by changing the code outputted from a printing control section for every time amount.

[0147] Thus, since a printing control section can judge whether pattern recognition equipment was removed intentionally by performing data communication with a fixed time interval between the communications department 11 and a printing control section, when pattern recognition equipment is removed intentionally, it becomes possible by taking correspondence of stopping printing to prevent a forged action beforehand.

[0148] <Operation gestalt of ** 14th> drawing 7 is the block diagram showing the outline configuration of the pattern recognition equipment by the 14th operation gestalt of this invention, and this pattern recognition equipment is constituted by the control circuit chip 13 with which the blocking section 1, a comparator 2, and the reference ROM Monitoring Department 14 were formed, and two chips of reference ROM3a with which presetting of the reference data was carried out. In addition, pattern recognition processing is performed completely like the 1st operation gestalt.

[0149] The predetermined code of for example, "10101010 grade is assigned to the reference ROM Monitoring Department 14. Moreover, presetting of the same code as what was set as the reference ROM Monitoring Department 14 is carried out to the predetermined address of reference ROM3a.

[0150] And at the time of starting of a power source, the control circuit chip 13 gives the address with which the program set of the above-mentioned code is carried out to reference ROM3a, as shown in drawing 21 , and it makes the control chip 13 output the above-mentioned code C to it. Then, the reference ROM Monitoring Department 14 compares the code and the code C from reference ROM3a which were set as the reference ROM Monitoring Department 14 concerned, and when not in agreement in the signal of the purport that it is normal when in agreement, it outputs the supervisory signal of a purport with which the forged recognition circuit was intercepted to a printing control section. In this case, a printing control section stops normal printing actuation, when the supervisory signal of a purport with which the forged recognition circuit was intercepted is received.

[0151] By such function, it becomes possible [preventing a forged action beforehand] to remove reference ROM3a etc., also when data transfer with the control circuit chip 13 is intercepted intentionally.

[0152] An input means to input digital image data according to this operation gestalt as explained above, A registration means by which the image pattern data of the description part of predetermined printed matter are registered beforehand, A comparison means to compare the digital image data inputted by said input means with the image pattern data registered into said registration means, The recognition section which has a recognition means to distinguish

whether said inputted digital image data is a thing corresponding to said predetermined printed matter based on the comparison result by this comparison means, and to recognize forgery, It has a detection means to detect the cut off state of this recognition section, and to notify to a printing control section, and it becomes possible to prevent beforehand the forged action by cutoff of the pattern recognition section.
[0153] In addition, in an above-mentioned example, although the average concentration value of a block was used for the comparison, a sub sampled value and central value of a block, such as a maximum-density value, may be used.
[0154] Moreover, a block configuration and size are not restricted to an above-mentioned example.
[0155] Moreover, in an above-mentioned example, a digital image 4 is a color component signal for record used for the image formation by the image formation means. An image formation means performs image formation here based on the recognition result output 7. For example, when recognized as it being a specific manuscript, the whole image is painted out black, or a process means is operated so that the image formation in normal image formation conditions may be prevented.
[0156] Moreover, the view of each above-mentioned example may be combined with arbitration.
[0157] According to each operation gestalt which starts this invention as explained above, since specific images, such as negotiable securities, can be recognized efficiently and with high precision, when adapted for a printer, for example, the printing can be made into impossible, or when adapted for a copying machine, the copy activity can be done impossible.
[0158] And since the blocking section should just create block data based on the image data inputted with serial data, only the memory which memorizes the whole image becomes unnecessary that what is necessary is just to have the memory for several Rhine minutes depending on the size of the block when carrying out blocking processing.
[0159] Moreover, even if it applies this invention to the system which consists of two or more devices, it may be applied to the equipment which consists of one device. Moreover, it cannot be overemphasized that this invention can be applied also when attained by supplying a program to a system or equipment.
[0160]
[Effect of the Invention] Since a specific image is identified based on the color component signal for record according to the indication signal which shows the color component under processing according to this invention as explained above, it becomes possible to identify a specific image with an easy configuration.
[0161]

[Translation done.]

* NOTICES *

JPO and NCIPI are not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block block diagram of the judgment circuit in the 1st operation gestalt.

[Drawing 2] It is drawing for explaining the outline of the quantization processing in an operation gestalt.
[Drawing 3] It is drawing for explaining the outline of an extract of reference data.
[Drawing 4] It is drawing showing a format of the data memorized by the reference data division in the 1st operation gestalt.
[Drawing 5] It is the flow chart which shows the procedure of operation in the 1st operation gestalt.
[Drawing 6] It is drawing showing the structure of the reference data in the 2nd operation gestalt.
[Drawing 7] It is drawing showing the structure of the reference data in the 3rd operation gestalt.

[Drawing 8] It is drawing showing a format of the data memorized by the reference data division in the 3rd operation gestalt etc.
[Drawing 9] It is the block block diagram of the judgment circuit of the 5th operation gestalt.
[Drawing 10] It is drawing showing the concept of the reference data in the 6th operation gestalt.

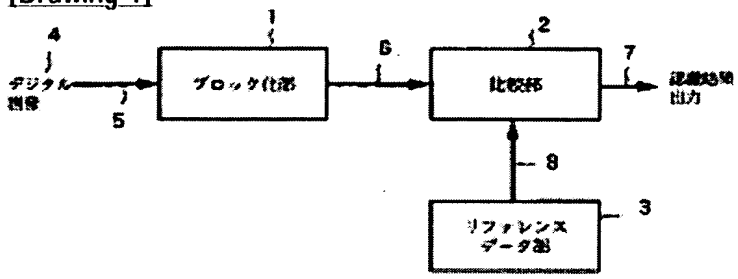
[Drawing 11] It is the block block diagram of the judgment circuit of the 7th operation gestalt.
[Drawing 12] It is the block block diagram of the judgment circuit of the 8th operation gestalt.
[Drawing 13] It is the block block diagram of the judgment circuit of the 9th operation gestalt.
[Drawing 14] It is drawing for explaining the generation outline of the reference data in the 9th operation gestalt.
[Drawing 15] It is drawing showing the adjustment outline of the reference data in the 10th operation gestalt.
[Drawing 16] It is the block block diagram of the judgment circuit in the 11th operation gestalt.
[Drawing 17] It is drawing showing the example of change of the reference data in the 11th operation gestalt.
[Drawing 18] It is the block diagram showing the outline configuration of the pattern recognition equipment by the 12th operation gestalt of this invention.
[Drawing 19] It is the block diagram showing the configuration of the input signal Monitoring Department.
[Drawing 20] It is the block diagram showing the outline configuration of the pattern recognition equipment by the 13th operation gestalt of this invention.
[Drawing 21] It is the block diagram showing the outline configuration of the pattern recognition equipment by the 14th operation gestalt of this invention.
[Drawing 22] It is the sectional side elevation showing the configuration of the color laser beam printer which is the typical operation gestalt of this invention.
[Drawing 23] It is the block diagram showing the functional configuration of a printer 100.
[Drawing 24] It is the block diagram showing the functional configuration of printer engine 3.
[Drawing 25] It is drawing showing the timing of the Vertical Synchronizing signal (VSYNC) in an image formation process, a Horizontal Synchronizing signal (BD), and a picture signal (VDO).
[Drawing 26] It is the block diagram showing the internal configuration of the signal-processing section 4.
[Description of Notations]
1 Blocking Section
2 Comparator
3 Reference Data Division

[Translation done.]

* NOTICES *

DRAWINGS

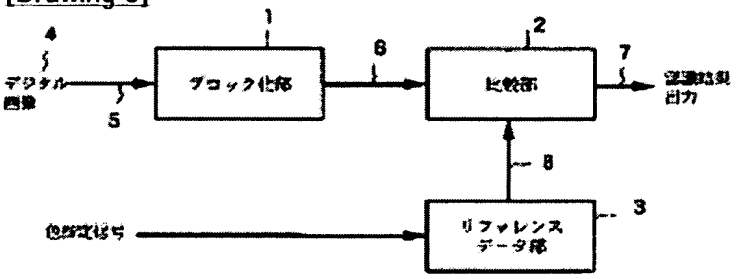
[Drawing 1]



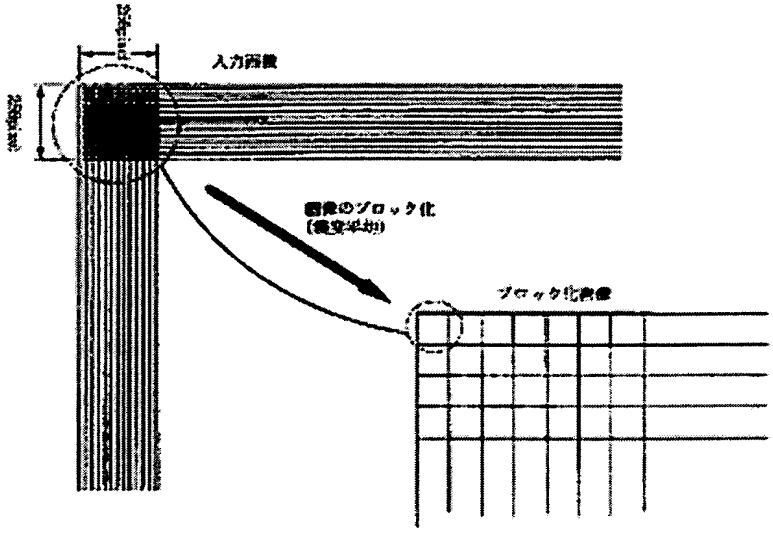
[Drawing 4]

A	リファレンスデータ
B	リファレンスデータ
C	リファレンスデータ
D	リファレンスデータ
E	リファレンスデータ
⋮	⋮

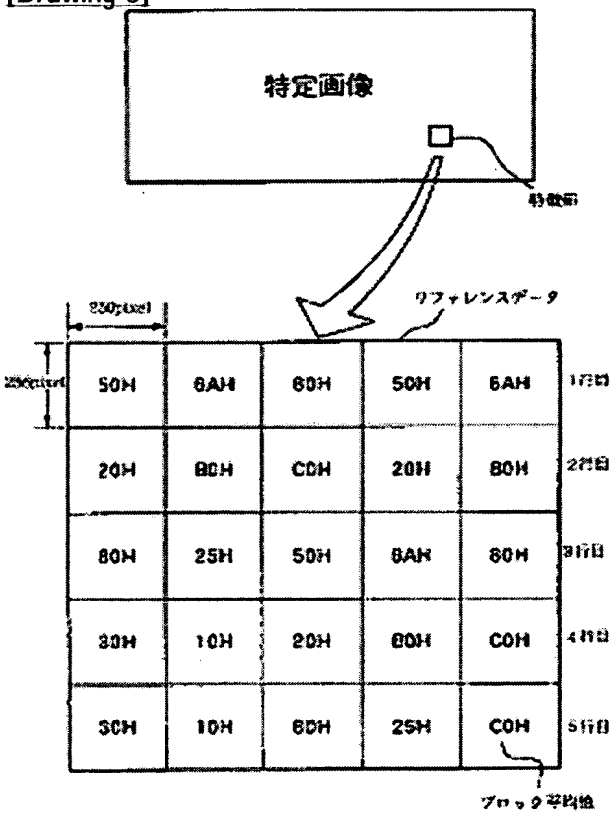
[Drawing 9]



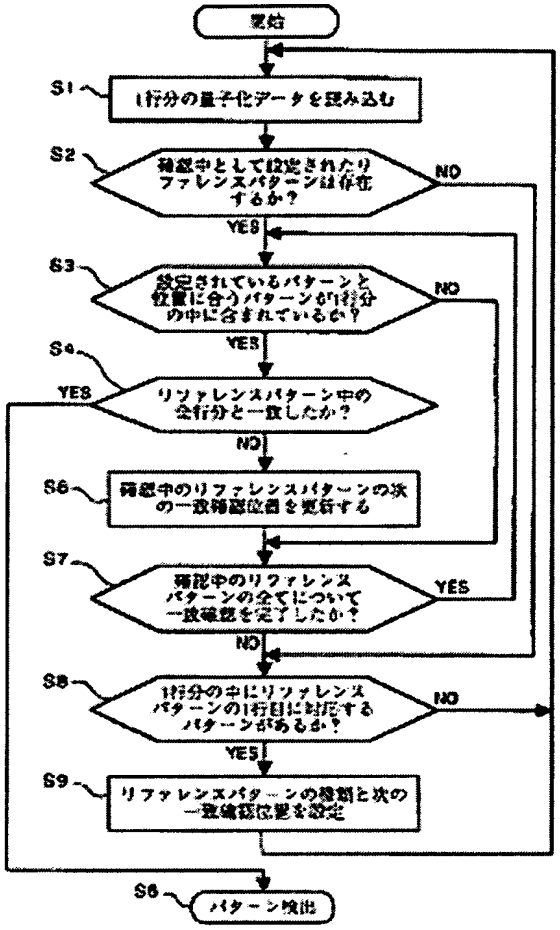
[Drawing 2]



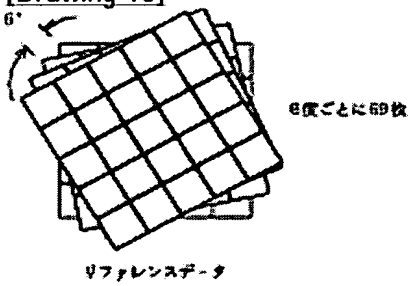
[Drawing 3]



[Drawing 5]



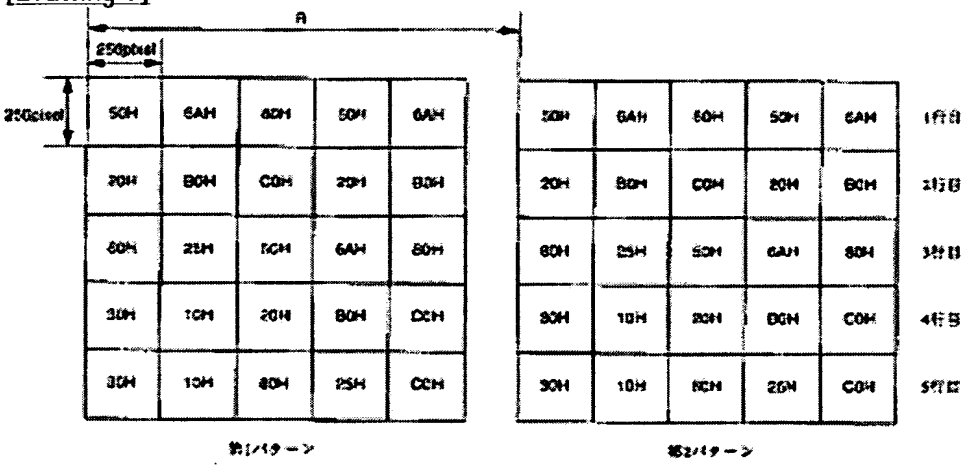
[Drawing 10]



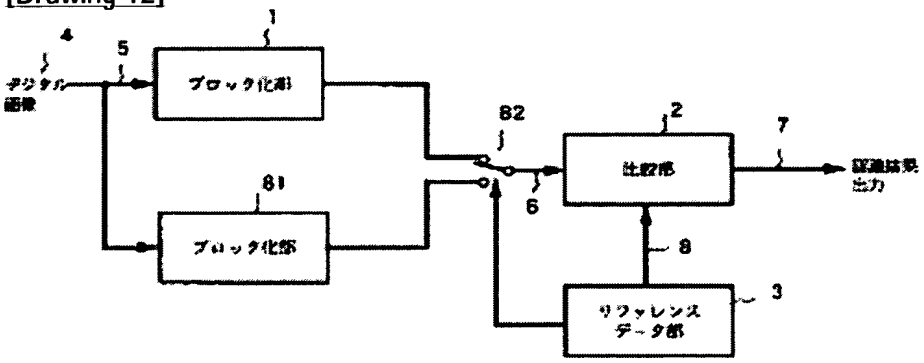
[Drawing 6]

00H ～50H	6AH ～FAH	80H ～A0H	50H ～53H	3AH ～8AH
20H ～40H	80H ～F0H	C0H ～E0H	20H ～40H	B0H ～F0H
80H ～A0H	25H ～B5H	50H ～C0H	8AH ～AAH	80H ～F0H
30H ～D0H	10H ～20H	20H ～30H	B0H ～F0H	C0H ～F0H
30H ～50H	10H ～50H	80H ～D0H	25H ～55H	C0H ～F0H

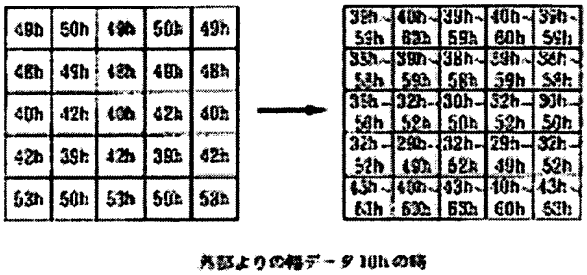
[Drawing 7]



[Drawing 12]



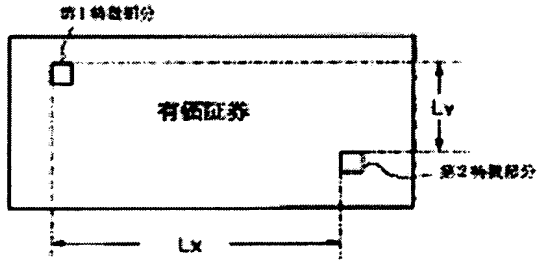
[Drawing 17]



外部よりの輝データ10hの時

[Drawing 8]

(I)

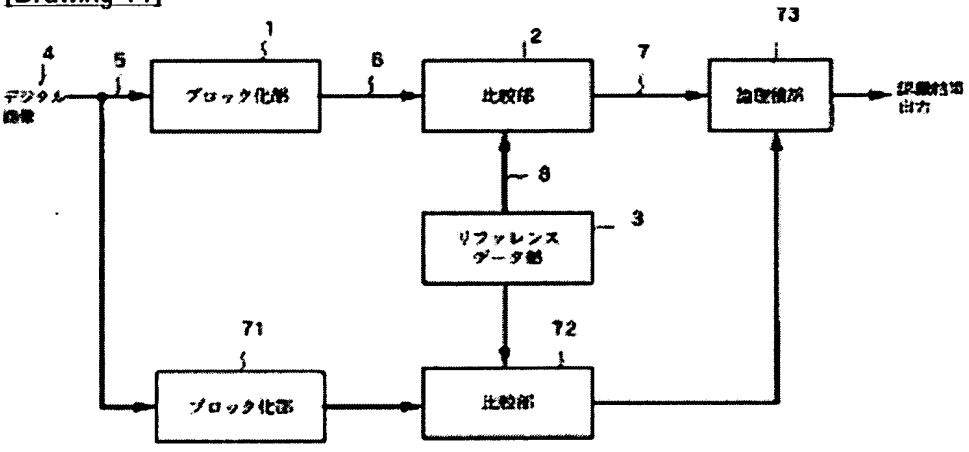


(II)

有価証券

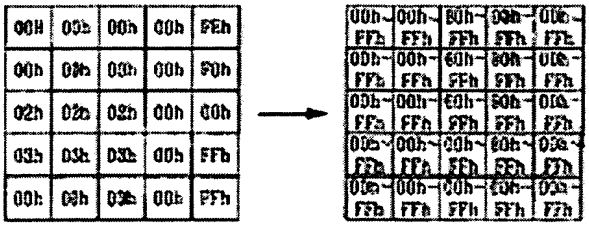
A	Lx, Ly	リファレンスデータa	リファレンスデータb
B	Lx, Ly	リファレンスデータa	リファレンスデータb
C	Lx, Ly	リファレンスデータa	リファレンスデータb
D	Lx, Ly	リファレンスデータa	リファレンスデータb
⋮	⋮	⋮	⋮

[Drawing 11]

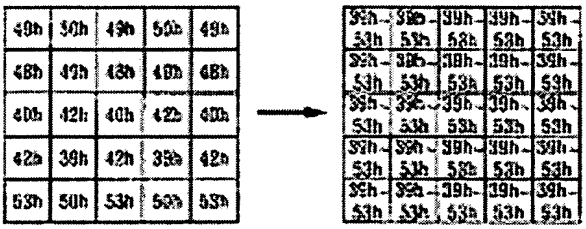


[Drawing 15]

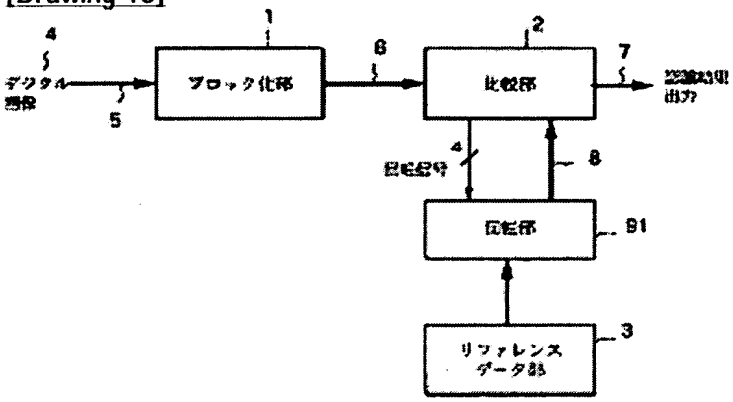
(A)



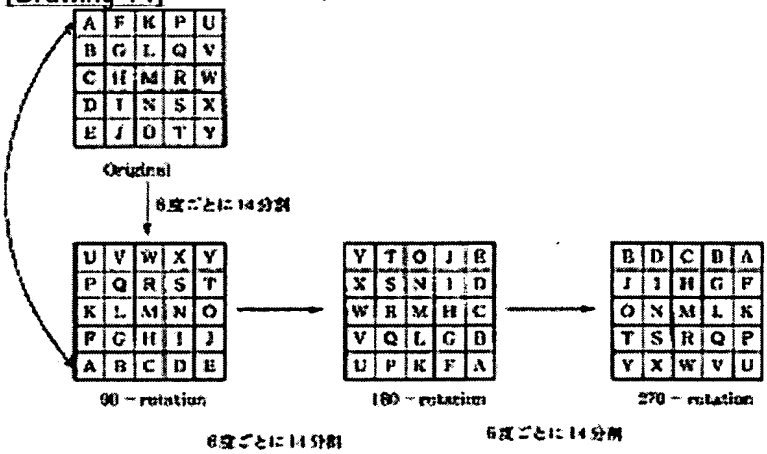
(B)



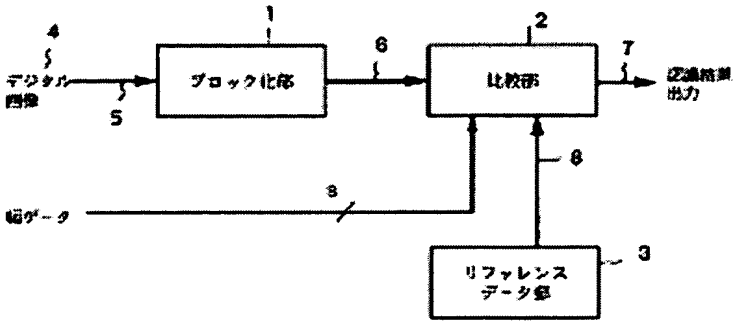
[Drawing 13]



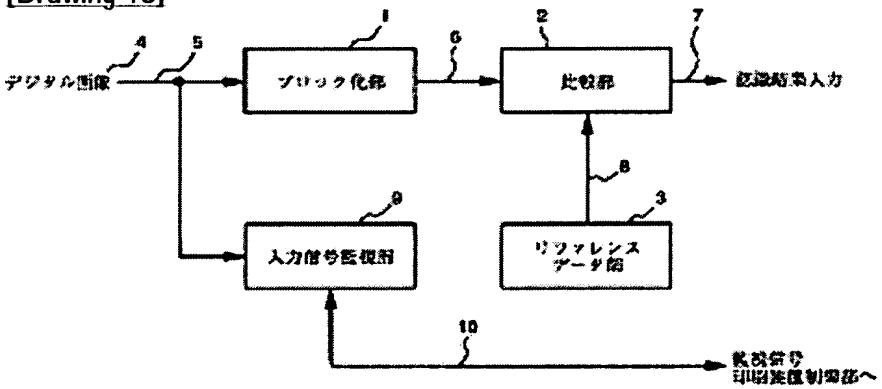
[Drawing 14]



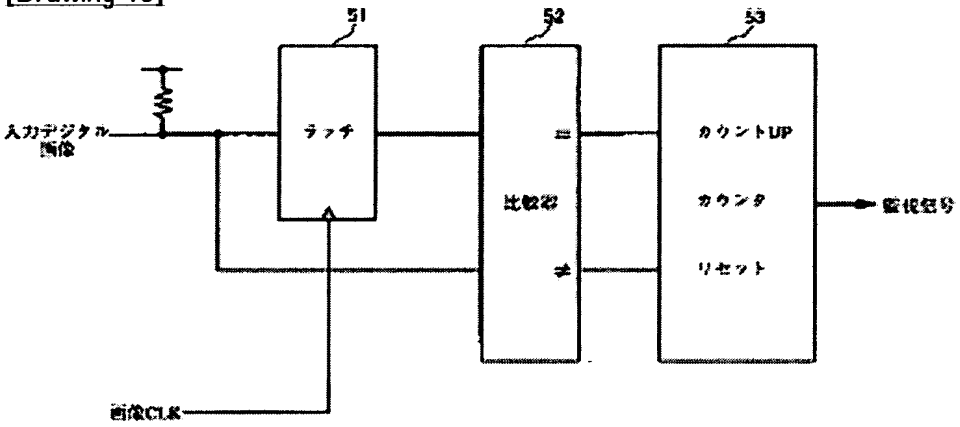
[Drawing 16]



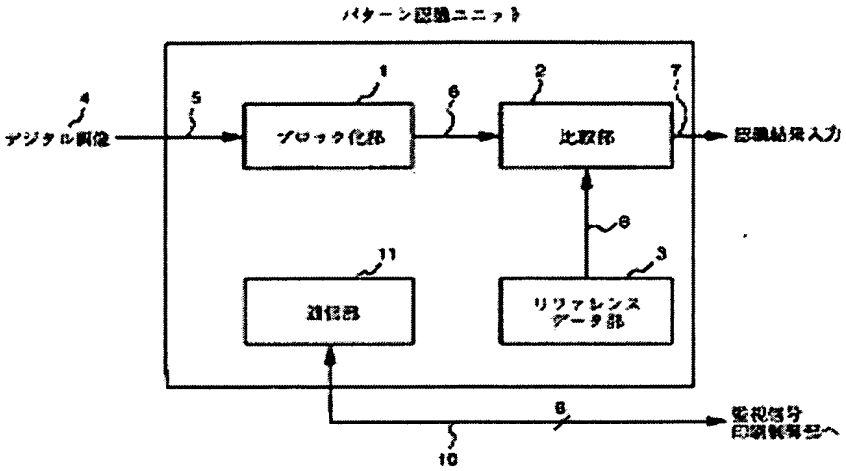
[Drawing 18]



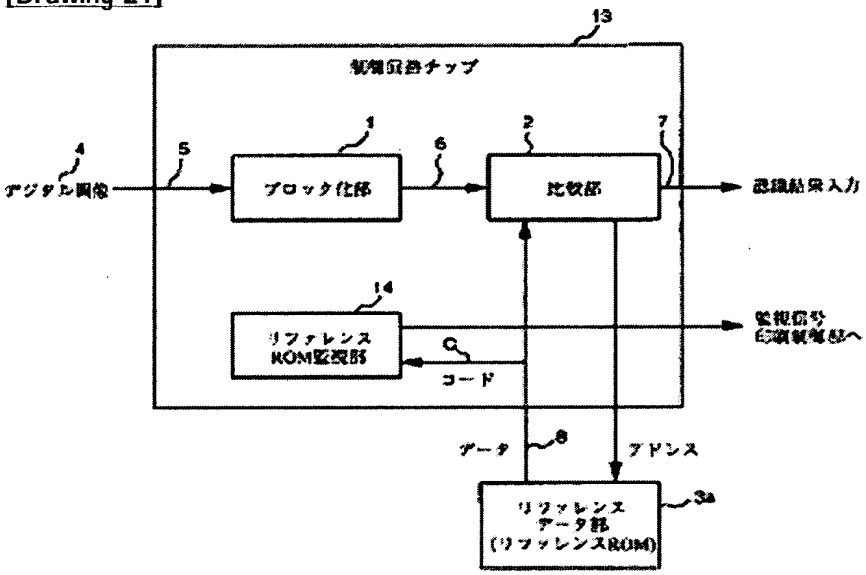
[Drawing 19]



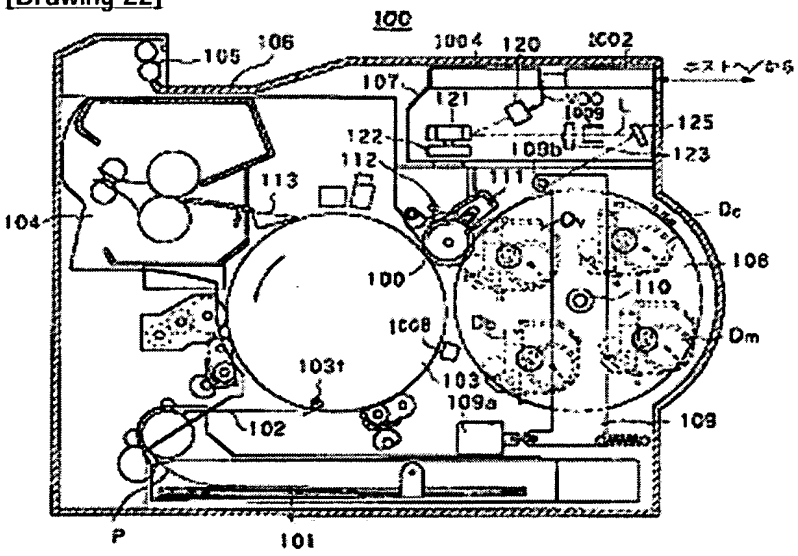
[Drawing 20]



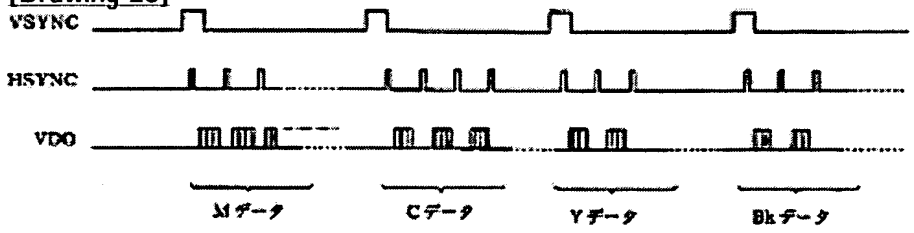
[Drawing 21]



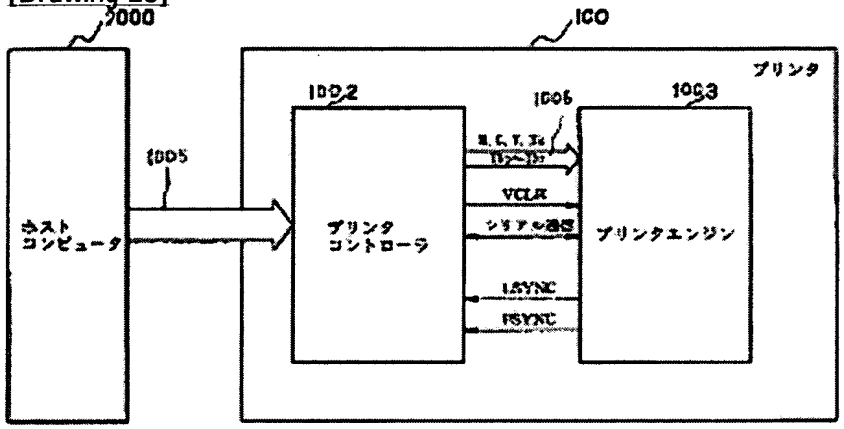
[Drawing 22]



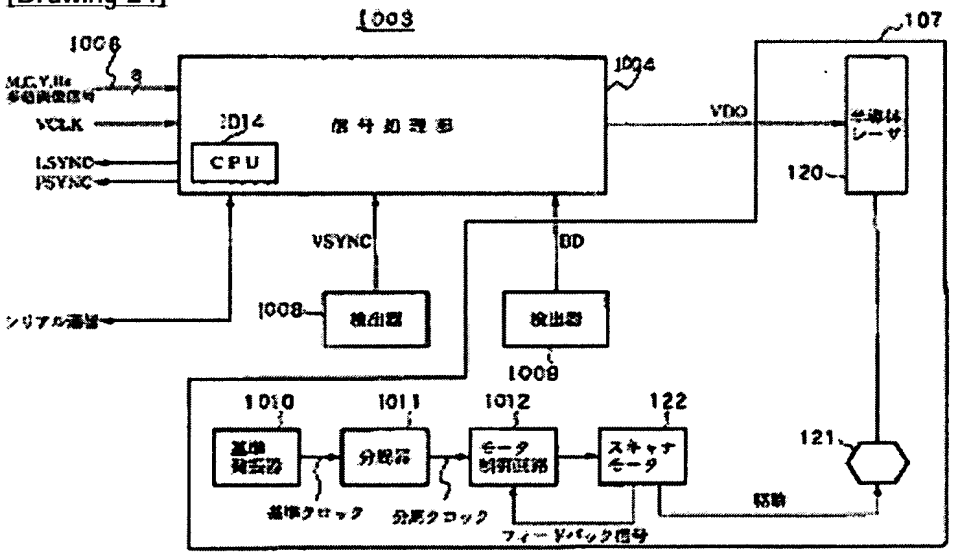
[Drawing 25]



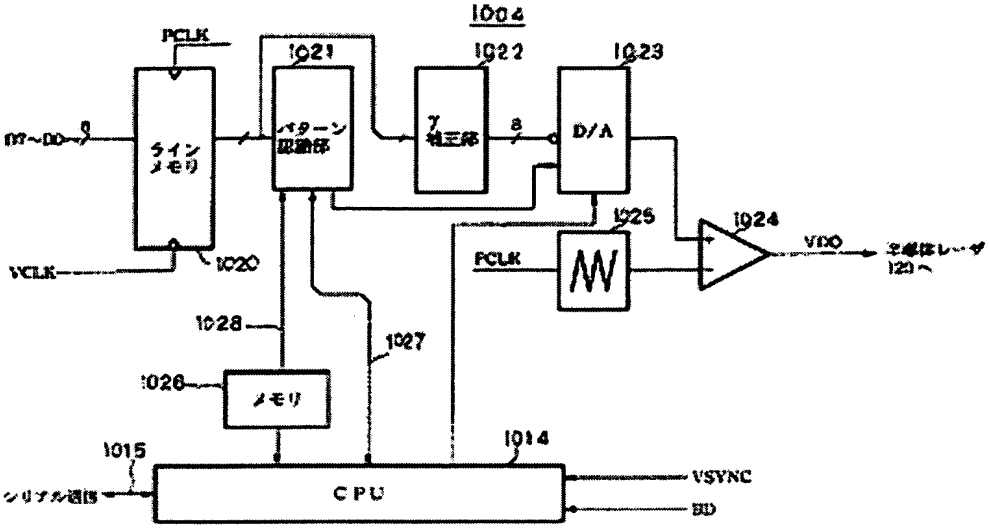
[Drawing 23]



[Drawing 24]



[Drawing 26]



[Translation done.]